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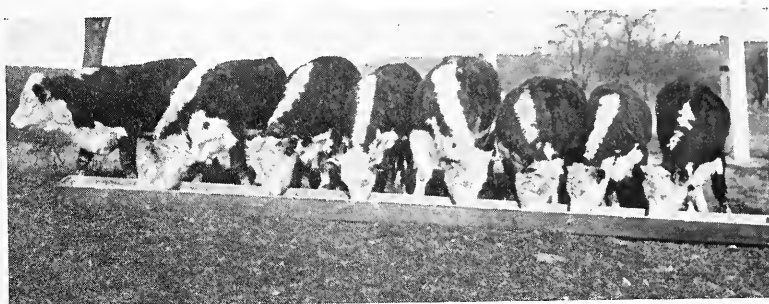
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AGRICULTURAL EXPERIMENT STATION
COLLEGE OF AGRICULTURE, WEST VIRGINIA UNIVERSITY
E. D. FROMME, Director
MORGANTOWN

Finishing Calves for the Market as Baby-Beeves, Two-Year-Old, and Three-Year-Old Steers

by E. A. LIVESAY



A Typical Lot of Calves Used in the Experiment

THE MAJORITY of finished cattle going on the market from West Virginia are three-year-old grass-fat steers weighing in the neighborhood of 1300 to 1400 pounds. The demand for cattle of this weight and finish has been declining for many years, and the economy of producing heavy grass-finished steers is questionable. An experiment, reported in this publication, was inaugurated with the object in view of determining if baby beef production has a place in the cattle industry of the state and if two-year-old steers cannot be finished for slaughter to a better advantage than three-year-old steers. Calves were purchased and the experimental work was started on the Animal Husbandry farm at Morgantown during the late fall of 1924. The work continued for a period of six years until the fall of 1930.

METHOD OF HANDLING AND FINISHING CALVES

Good, grade, native Hereford steer calves were used with the exception of one lot of baby beeves and one lot of two-year-old steers, both of good, grade, native Aberdeen-Angus steer calves. All the calves were spring calves, being dropped from March 1 to June 1.

In the late fall of 1924, three lots of eight calves each were started on the experiment. The calves of Lot I were fed a heavy grain ration in drylot and marketed as baby beeves when approximately 15 months of age; Lots II and III were wintered in a manner to produce growth the first and second winters and were grazed on a fair bluegrass pasture during the two grazing seasons. After the second grazing season the steers of Lot II were fed a full grain ration in drylot for a short period before marketing. The steers of Lot III, which were marketed as three-year-old grass-fat steers, were wintered the third winter in a manner to maintain approximately their late fall weight. These steers were marketed from grass near the close of the following grazing season.

When lots of baby beeves, two-year-old, or three-year-old steers were marketed, calves were purchased to replace them. Hence during the six years of the experiment six lots of calves were finished and marketed as baby beeves, three lots as two-year-old steers and two lots as three-year-old steers. The rate of turnover and the length of time it is necessary to tie up capital in calves is emphasized by the fact that twice as many calves can be marketed as baby beeves as can be marketed as two-year-old steers, and one-third more can be marketed as two-year-old steers than as three-year-old steers.

FEEDS AND WEIGHTS

The roughages were all home grown and were of good quality. All of the concentrates were purchased, and the prices used for these feeds are average cost prices for the six-year-period. The value of the roughages was based upon the costs of such feeds in this section during the duration of the experiment. In arriving at the value of loose, home-grown hays and straw the necessary expense of baling and placing such feeds upon the market was deducted from the market price of similar grades sold in this locality. In all cases the animals were fed twice daily. Salt and water were kept before all lots during the various feeding periods. The oats and molasses in the baby beef rations (Table 1) were not fed throughout the feeding periods. Oats was fed heavier the first half of the period and was gradually replaced by corn during the last half. A small quantity of molasses was fed during the last six weeks of the feeding period in 1925, 1926, and 1929. The steers were confined to small, concrete paved lots with open sheds during all finishing and winter feeding periods.

The same pasture was used each year for the cattle finished as two-year-olds and three-year-olds, and was a light bluegrass sod of fair quality. The cost of the pasture was based on the actual rental

value and was prorated according to the age of steers and the season of the year each group was grazed. These pasture costs are considered a fair prorata charge for the steers of various ages and Tables 2 and 3 give the daily and total costs per steer.

The winter feeding periods (including the baby beef lots) began around December 12 each year with the exception of the first lots of calves, which were started the latter part of November (1924). The baby beeves were marketed from June 27 to July 27 each year. The calves which were developed into two-year-old (Lots II-A, II-B, and II-C—Table 2) and three-year-old steers (Lots III-A and III-B—Table 3) were turned to grass from April 17 to May 2 each year. The first grazing period for cattle of Lot II and the first and second grazing periods for the cattle of Lot III extended into the second week of December each year. The cattle of Lot II were removed from grass during the second week of September of the second grazing season and were placed in drylot for a short feeding period (see Table 2). The cattle of Lot III were sold from grass during the third grazing season in the second week of September as grass-fat three-year-old steers (see Table 3).

Each individual steer was weighed at the beginning and end of experimental trials and at 28-day intervals during the interim.

All cattle were marketed through the Producers Cooperative Commission Association, Pittsburgh, except Lot I-B (1926) and Lot I-F (1930). The cattle of Lot I-B (1926) were sold to Crawford's Market, Clarksburg, W. Va., and those of Lot I-B (1930) to the Morgantown Packing Company, Morgantown, W. Va.

RESULTS OF THE EXPERIMENT

Feed and pasture costs are so variable in different sections of West Virginia that one hesitates to apply values to feeds or pastures used in experimental work. However, the following averages were used for feeds in all cost data:

Corn (No. 2) -----	\$ 1.85 per 100 lbs.
Oats (No. 2) -----	1.70 per 100 lbs.
Cottonseed meal (choice) -----	45.00 per ton
Linseed oilmeal (old process) -----	50.00 per ton
Molasses -----	2.50 per 100 lbs.
Alfalfa hay -----	20.00 per ton
Mixed hay -----	17.00 per ton
Oat straw -----	7.00 per ton
Corn silage -----	6.40 per ton
Chopped green corn -----	6.40 per ton

The charges for pasture are indicated in Tables 2 and 3. Readers should apply values applicable to their locality in interpreting the results of this experiment.

Baby Beeves

Complete data for the six lots of baby beeves are given in Table 1. These calves were fed a full grain ration each year and remained in drylot until marketed. At the beginning of these trials corn and

TABLE 1—Calves Marketed as Baby Beeves

Item	Lot number and year						Lot I-F Average 1950 of 6 lots
	Lot I-A 1925	Lot I-B 1926	Lot I-C 1927	Lot I-D 1928	Lot I-E 1929	Lot I-F 1930	
Number of calves	8	8	6	8	8	8	46
Cost per calf	\$ 40.32	\$ 32.48	\$ 40.00	\$ 60.00	\$ 60.00	\$ 60.00	\$ 48.80
No. of days	294	243	224	195	210	220	220
Ave. initial wt.†	504	406	466	486	420	453	456.5
Ave. final wt.	951	937	942	955	835	924	929
Ave. gain	477	531	476	470	415	466	472.5
Ave. daily gain	2.13	2.18	2.12	2.41	1.98	2.07	2.15
Ration							
Cracked corn	8.12	7.98	8.58	9.05	8.23	6.73	
Ground oats	4.61	3.47	3.77	3.09	3.08	3.22	
Linseed oilmeal	1.13	.83	1.07	1.14	.88	.88	
Cottonseed meal	.90	.89	.65	1.14	.64	.49	
Molasses	.12	.04	..	..	.10	..	
Silage	2.60	2.65	2.66	2.98	2.35	2.48	
Alfalfa	4.12	3.18	3.21	..	..	..
Mixed hay	..	..	..	2.44	2.67	5.22	
Feed and Costs Per Steer							
Corn	1818	\$ 33.63	1940	1923	\$ 35.58	1764	\$ 32.63
Oats	1033	17.56	844	532	9.04	602	10.23
Linseed oilmeal	254	6.35	201	241	6.03	222	5.55
Cottonseed meal	202	4.55	216	145	3.26	222	5.00
Molasses	26	.65	10	..	..	..	..
Silage	580	1.86	644	598	1.91	582	1.86
Alfalfa	922	9.22	773	719	7.19	..	..
Mixed hay	..	..	..	..	..	..	..
Total Cost Feed per Steer		\$ 73.82			\$ 63.01	476	\$ 59.32
Cost per cwt. Gain		15.48			13.24		12.62
Total Cost per Steer		114.14			103.01		119.32
Necessary Selling Price at							
Home	11.63	10.95	10.93	12.49	14.14	12.93	12.13
Shrink on market	960	917	923	936	805	904	907
Shrink (lbs.)	21	20*	19	19	30	20*	22
Percent shrink	2.14	2.26	2.02	1.99	3.59	2.16	2.86
Selling price	\$ 14.00	\$ 12.00	\$ 12.50	16.00	15.83	10.00	13.39
Return per steer (gross)	134.40	112.44	115.37	149.76	127.43	90.40	
Marketing cost	3.51	3.12	4.05	4.30	3.75	none	
Profit or loss per steer (net)	+16.75	+6.61	+8.31	+36.14	+8.27	-29.12	+5.84
†Calf return value	57.07	39.15	48.31	86.14	66.27	30.88	54.64
Ave. hot carcass wt., lbs.	601	583	573	572	477	544	558
Ave. dress per cent (hot wt. by market wt.)	62.60	63.57	62.08	61.11	59.25	60.17	
Ave. dress per cent (hot wt. by home wt.)	61.26	62.22	60.83	59.89	57.12	58.87	

*Not weighed, but shrink allowed purchaser.

oats were fed in equal amounts (pounds). Each 28 days the oats was gradually replaced by corn until very little oats was fed at the close of the trials. Corn silage was fed at the rate of 4 pounds per day from the start of these trials until the first of May each year, and hay was allowed at liberty throughout the periods. Small quantities of molasses were fed near the close of the period in 1925, 1926, and 1929.

Two calves were lost during the 1927 feeding period. These two calves died within a few days of each other; their deaths probably were due to moldy silage, which was not observed until after the calves became ill. As all calves were weighed individually every 28 days, the total amount of feeds fed up to their deaths was reduced according to their percentage weight of the total lot weight.

The average weight of the calves at the start of the trials was 456.5 pounds. They were fed for an average of 220 days, making an average daily gain of 2.15 pounds, or an average total gain of 472.5 pounds. The average final home weight was 929 pounds and the average market weight, 907 pounds. The cost of gains varied from \$12.62 to \$15.48 per cwt., the average being \$13.52. Five of the six lots of calves returned small profits. The 1930 lot returned an average loss per calf of \$29.12. However, for the six lots over the six-year period the average net profit per calf was \$5.84. The data show that these calves developed and marketed as baby-beeves returned an average potential value of \$54.64. These calves would have returned some additional profit had it been possible to let a few hogs follow them. Because of a rather low grain trough and the small size of the feeding quarters it was not feasible to have hogs follow the steers. The results indicate that calves weighing around 450 pounds and handled as they were in this experiment, can be finished in a satisfactory manner for the market in approximately 220 days. The baby beeves marketed in this experiment without exception carried sufficient finish to bring the top of the market at the time of their sale.

A study of the rations reveals that the most rapid and the most economical gains were made in 1928, and this holds true if all the other lots are figured back to approximately the same length of feeding period. The ration for Lot I-D, 1928, based upon the chemical analyses of feeds made by the department of agricultural chemistry, proved to have a nutritive ratio of 1:5.7, the narrowest ratio of any ration. The least rapid gains, but not the most costly, were made by Lot I-E, 1929, and the nutritive ratio of the ration was 1:7.3, the widest nutritive ratio of any ration. This would indicate that the nutritive ratio of rations for finishing baby beeves should be rather narrow.

Two-Year-Old Steers

Table 2 gives the results of developing calves into two-year-old steers for slaughter. These steers were carried through two winters and two grazing periods and then were given a short grain feeding

period in drylot. It was found that these two-year-old steers could not be finished sufficiently for slaughter on grass alone and a short grain feeding period was necessary. During the experiment two steers were lost through accident.* Lot II-A was fed in a manner which produced more gain during the winter feeding periods than

*One steer fell and broke his neck in pasture as a yearling in Lot II-A, and one steer in Lot II-B was struck by a truck while being driven to pasture and was slaughtered.

TABLE 2—Calves Marketed as Two-Year-Old Steers

Item	Lot number and year			
	Lot II-A 1925-26	Lot II-B 1927-28	Lot II-C 1929-30	Average 3 lots
Number of calves	7	7	8	22
FIRST WINTER FEEDING PERIOD—calves				
No. of days	142	129	120	
Ave. initial wt.†	489	497	453	479
Ave. final wt.	631	592	530	584
Ave. gain	142	95	77	105
Ave. daily gain	1.00	0.74	0.64	0.79
Ration				
Corn	1.24			
Linseed meal	.23	.97	.96	
Cottonseed meal	1.02	.97	.97	
Corn silage	17.49	10.85	9.60	
Mixed hay	4.92		3.60	
Alfalfa		3.99		
Total Feed and Cost per Steer				
Corn	176	\$ 3.26		
Linseed meal	33	.83	125	\$ 3.13
Cottonseed meal	145	3.26	125	2.81
Corn silage	2484	7.95	1400	4.48
Mixed hay	703	5.98		1165
Alfalfa			515	5.15
Total cost		\$ 21.28	\$ 15.57	\$ 12.95
				\$ 16.60
PASTURE—FIRST SUMMER				
No. of days	224	234	245	
Ave. final wt.	849	810	795	
Ave. gain	218	218	265	234
Ave. daily gain	0.97	0.93	1.08	0.99
Cost (5 cents per day)	\$ 11.20	\$ 11.70	\$ 12.25	\$ 11.72
Total Cost for Year	\$ 32.48	\$ 27.27	\$ 25.20	\$ 28.32
Total Gain for Year	360	313	342	338
Cost per cwt. Gain for Year	\$ 9.02	\$ 8.71	7.37	\$ 8.37
SECOND WINTER FEEDING PERIOD—yearling steers				
No. of days	133	142	127	
Ave. final wt.	1000	899	877	
Ave. gain	151	89	82	107
Ave. daily gain	1.14	0.63	0.64	0.80
Ration				
Cottonseed meal	1.53	1.45	1.50	
Corn silage	28.39	24.14	24.00	
Mixed hay	4.06	4.62	3.00	
Total Feed and Cost per Steer				
Cottonseed meal	203	\$ 4.54	206	\$ 4.63
Corn silage	3776	12.08	3428	10.97
Mixed hay	540	4.59	656	5.58
Total cost		\$ 21.21	\$ 21.18	\$ 17.26
				\$ 19.88
PASTURE—SECOND SUMMER				
No. of days	147	128	154	
Ave. final wt.	1095	1127	1172	
Ave. gain	95	228	295	206
Ave. daily gain	.65	1.78	1.92	1.45
Cost (10 cents per day)	\$ 14.70	\$ 12.80	\$ 15.40	\$ 14.30
Total Cost for Year	\$ 35.91	\$ 33.98	\$ 32.66	\$ 34.18
Total Gain for Winter and Pasture Period	246	317	377	313
Cost per cwt. Gain	\$ 14.60	\$ 10.72	\$ 8.66	\$ 10.92

TABLE 2—Calves Marketed as Two-Year-Old Steers—(Concluded)

Item	Lot number and year					
	Lot II-A 1925-26	Lot II-B 1927-28	Lot II-C 1929-30	Average 3 lots		
Number of calves	7	7	8	22		
FINISHING PERIOD—two-year-old steers—drylot						
No. of days	80	56	56			
Ave. final wt.	1345	1348	1359			
Ave. gain	250	221	187	219		
Ave. daily gain	3.12	3.95	3.34	3.47		
Ration						
Cracked corn	18.23	22.18	24.00			
Cottonseed meal	.85	3.70	1.44			
Chopped green corn	6.06					
Clover hay	7.37					
Mixed hay		6.66	4.52			
Feed and Cost per Steer						
Corn	1458	\$ 26.97	1242	\$ 22.98	1344	\$ 24.86
Cottonseed meal	68	1.53	185	4.16	181	1.82
Chopped green corn	485	1.55				
Clover hay	590	5.31				
Mixed hay			373	3.17	253	2.15
Total cost		\$ 35.36		\$ 30.31		\$ 28.82
Cost per cwt. gain		14.14		13.71		15.41
						14.42
SUMMARY (ENTIRE PERIOD)						
Cost per calf	\$ 39.12	\$ 40.00	\$ 60.00	\$ 46.37		
No. of days (total)	726	689	702	707		
Ave. initial wt.	489	497	453	479		
Ave. final wt.	1345	1348	1359	1351		
Ave. gain	856	851	906	872		
Ave. daily gain	1.18	1.23	1.29	1.23		
Cost feed and pasture	\$ 103.75	\$ 91.56	\$ 86.68	\$ 94.00		
Cost per cwt. gain	12.12	10.76	9.57	10.77		
Total cost per steer	142.87	131.56	146.68			
Necessary selling price at home	10.62	9.76	10.77	10.38		
MARKETING DATA						
Wt. on market	1270	1287	1312	1290		
Shrink—lbs.	75	61	47	61		
Percent Shrink	5.57	4.52	3.46	4.51		
Selling price	\$ 10.25	\$ 15.50	\$ 10.50			
Returns per steer	130.18	199.49	137.76			
Marketing cost	5.19	5.15	5.77			
Total costs	148.06	136.71	152.45			
Profit or loss per steer	-17.88	+62.78	-14.69			
Calf return value	21.24	102.78	45.31	56.44		
SLAUGHTER DATA						
Ave. hot carcass wt.	779	777	790	783		
Ave. dressing per cent (hot and market wt.)	61.34	60.37	60.21			
Ave. dressing per cent (hot and home wt.)	57.92	57.64	58.13			

†All weights of calves and of feeds are given in pounds.

did Lots II-B and II-C. However, the differences in winter gains were overtaken during the two grazing periods by the cattle of Lots II-B and II-C. This would indicate that calves which are to be carried on pasture for two seasons should be wintered rather economically both as calves and as yearlings.

Rations which will produce from 75 to 100 pounds of winter gains are satisfactory. A ration of approximately 10 pounds of corn silage, 4 pounds of either a good mixed hay or alfalfa hay, 1 pound of cottonseed meal, and 1 pound of linseed meal proved to be a very satisfactory ration for calves weighing between 450 and 500 pounds at the beginning of the winter feeding period. A ration of approx-

imately 24 pounds of corn silage, 4 pounds of mixed hay (clover and timothy), and 1.5 pounds of cottonseed meal proved a satisfactory ration for yearlings weighing around 800 pounds at the start of the winter feeding period.

The steers in these lots were removed from grass during the second grazing season the second week of September, placed in dry-lot, and fed a full grain ration for a short feeding period (56 to 80 days). In these trials it was shown that a short feeding period on a full grain ration will produce more than 200 pounds gain and give a finished product superior to three-year-old steers marketed from grass. The average final weight of these steers was approximately 45 pounds less than the three-year-old steers (Table 3) marketed from grass; besides, they were marketed at an average of 10 months' younger age. The cost of the short grain feeding period was less than the cost of carrying two-year-old cattle another year and marketing from grass. The average cost of the three short grain feeding periods was \$31.49 and the average cost of wintering and grazing for another year was \$35.16. The hot dressing percentage (based on market weight) ranged from 60.21 to 61.34, which indicates sufficient finish for any retail trade.

The cost of producing 100 pounds gain on calves marketed as two-year-old steers varied from \$9.57 to \$12.12, or an average for the three lots of \$10.77. These three lots returned an average profit of \$10.07 per steer, but the steers marketed in the fall of 1926 and 1930 lost money. The steers marketed in the fall of 1928 returned an average profit of \$62.78 per steer. Had the calf producer handled these calves as they were handled in this experiment they would have returned him an average potential value of \$56.44.

Three-Year-Old Steers

Table 3 gives the data on calves developed and marketed as three-year-old grass-fat steers. These steers were carried through three winter feeding periods and three grazing periods and sold from grass as grass-fat steers towards the end of the third grazing season. As calves these steers were wintered to produce in the neighborhood of 100 pounds of gain. As yearlings and two-year-olds they were wintered in a manner to produce only slight gains. On the basis of the price paid for the calves and the cost of feeds and pasture the first lot showed a profit of \$32.02 per steer, while the second lot showed a loss of \$35.52 per steer. The average loss for the two lots was \$1.75 per steer. Calves handled in this manner returned an average potential value of \$47.65. The cost of gains gradually increased each year. The first year (winter feeding period and grazing period) the cost of 100 pounds gain was \$7.85; the second year \$11.71, and the third year \$12.17. The average cost of 100 pounds gain was \$10.38 or slightly less than the average cost of 100 pounds of gain in the case of calves fed and marketed as two-year-old steers. The average cost of 100 pounds of gain in the latter case (Table 2) was \$10.77.

TABLE 3—Calves Marketed as Three-Year-Old Steers

Item	Lot number and year		
	Lot III-A 1925-27	Lot III-B 1928-30	Average
Number of calves	8	8	16
FIRST WINTER FEEDING PERIOD—calves			
No. of days	142	142	
Ave. initial wt.†	485	466	476
Ave. final wt.	576	584	580
Ave. gain	91	118	104
Ave. daily gain	.64	.84	.74
Ration			
Corn silage	16.48	10.37	
Mixed hay	4.06	4.02	
Linseed meal	.22		
Cotton seed meal	1.02	2.02	
Feed and Cost			
Linseed meal	33	\$.82	
Cotton seed meal	145	3.26	287
Corn silage	2340	7.49	1472
Mixed hay	577	4.90	571
Total cost		\$ 16.47	\$ 16.02
			\$ 16.25
PASTURE—FIRST SUMMER			
No. of days	224	223	
Ave. final wt.	821	829	
Ave. gain	245	245	245
Ave. daily gain	1.09	1.10	1.09
Cost (5 cents per day)	\$ 11.20	\$ 11.15	\$ 11.17
Total Cost for Year		\$ 27.67	\$ 27.17
Total Gain for Year		336	349
Cost per cwt. Gain for Year		\$ 8.23	\$ 7.48
			\$ 7.85
SECOND WINTER FEEDING PERIOD—yearlings			
No. of days	133	120	
Ave. final wt.	863	836	
Ave. gain	42	7	24.50
Ave. daily gain	.32	.06	.19
Ration			
Corn silage	24.38	24.07	
Mixed hay	2.00	2.05	
Cotton seed meal	1.00	1.02	
Feed and Cost			
Corn silage	3243	\$ 10.38	2888
Mixed hay	266	2.26	246
Cotton seed meal	133	2.99	122
Total winter cost		15.63	14.07
			\$ 14.85
PASTURE—SECOND SUMMER			
No. of days	234	245	
Ave. final wt.	1115	1096	
Ave. gain	252	260	256
Ave. daily gain	1.08	1.06	1.07
Cost (7.5 cents per day)	\$ 17.55	\$ 18.37	\$ 17.96
Total Cost for Year		\$ 32.18	\$ 32.44
Total Gain for Year		294	267
Cost per cwt. Gain for Year		\$ 11.28	\$ 12.14
			\$ 11.71
THIRD WINTER FEEDING PERIOD—two-year-old steers			
No. of days	129	127	
Ave. final wt.	1157	1119	
Ave. gain	42	23	32.5
Ave. daily gain	.33	.18	.25
Ration			
Corn silage	25.00	25.00	
Oat straw	3.53	4.00	
Alfalfa hay	1.47		
Mixed hay	...	2.00	
Cotton seed meal	1.00	1.00	
Feeds and Cost			
Corn silage	3225	\$ 10.32	3175
Oat straw	455	1.59	508
Alfalfa hay	190	1.90	
Mixed hay			254
Cotton seed meal	129	2.90	127
Total cost		\$ 16.90	\$ 16.92
			\$ 16.91

TABLE 3—Calves Marketed as Three-Year-Old Steers—(Concluded)

Item	Lot number and year		
	Lot III-A 1925-27	Lot III-B 1928-30	Average
Number of calves	8	8	16
PASTURE—THIRD SUMMER			
No. of days	138	154	
Ave. final wt.	1389	1400	
Ave. gain	232	281	256
Ave. daily gain	1.68	1.97	1.82
Cost (12.5 cents daily)	\$ 17.25	\$ 19.25	\$ 18.25
Total Cost for Year	\$ 34.15	\$ 36.17	\$ 35.16
Total Gain for Winter and			
Pasture Period	274	304	289
Cost per cwt. Gain for Year	\$ 12.46	\$ 11.89	\$ 12.17
SUMMARY (ENTIRE PERIOD)			
Cost per calf	\$ 38.80	\$ 60.00	\$ 49.40
No. of days	1000	1010	
Ave. initial wt.	485	466	476
Ave. final wt.	1389	1400	1395
Ave. gain	904	924	919
Ave. daily gain	.90	.92	.91
Cost of feeds and pasture	\$ 95.00	\$ 95.78	\$ 95.39
Ave. cost per cwt. gain	\$ 10.51	\$ 10.25	\$ 10.38
Total cost per steer	\$138.80	\$155.78	
Necessary selling price on farm	9.63	11.12	
MARKETING DATA			
Weight on market	1314	1380	1347
Shrinks lbs.	75	20	48
Percent shrink	5.39	1.43	3.41
Selling price	\$ 13.00	\$ 9.10	
Returns per steer	170.82	125.58	
Marketing cost	5.00	5.32	
Total cost	138.80	161.10	
Profit or loss per steer	+32.02	-35.52	-1.75
Calf return value	70.82	24.48	47.65
SLAUGHTER DATA			
Ave. hot carcass wt.	796	} Not obtained	
Ave. dress % (hot wt. by market wt.)	60.57		
Ave. dress % (hot wt. by home wt.)	57.31		

†All weights of calves and of feeds are given in pounds.

SUMMARY AND DISCUSSION OF RESULTS

Table 4 gives the summarized data of the entire experiment. Readers should keep in mind that items under Lot I represent the results of finishing six lots of calves as baby beeves; items under Lot II represent the results of finishing three lots of calves as two-year-old steers; and items under Lot III represent the results of finishing two lots of calves as three-year-old steers.

Under the three systems of finishing calves for the market the time factor is important. It required an average of 220 days to finish calves as baby beeves; 707 days to finish calves as two-year-old steers; and 1005 days to finish calves as three-year-old steers. The cost of gains was greater in the case of baby beeves, but because of a higher sale value these calves returned a profit in five out of six years, giving an average annual profit of \$5.84 and an average potential value of \$54.64 for the calves. The average cost was prac-

tically the same for producing 100 pounds of gain on two-year-old and three-year-old steers, but the average profit on the three lots of calves finished as two-year-old steers was \$10.07 against an average loss of \$1.75 on the two lots of calves finished as three-year-old steers. The average potential calf value was \$56.44 in the case of calves finished as two-year-old steers, and \$47.65 for calves finished as three-year-old steers.

The above calculations do not take into consideration such items as labor, taxes, and interest charges. The labor charges were estimated to be 2½ times as great for the two-year-old steers as for the baby beeves and three times as great for the three-year-old steers as for the baby beeves. Taxes were estimated to be more than twice as great for the two-year-old steers as for the baby beeves and more than three times as great for the three-year-old steers as for the baby beeves. Interest charges will run in about the same proportion in favor of the baby beeves as the taxes.

The average initial weight of the calves developed into baby beeves was lighter by 20 pounds than the weight of those developed into two and three-year-old steers. This difference in weight was unfavorable to the potential value shown for the baby beeves. Taking these factors into consideration the calves developed and marketed as baby beeves had a greater potential value than calves developed and marketed as two-year-old or three-year-old steers.

The dressing percentages of the two-year-old and three-year-old groups show that two-year-old steers can be given a full grain ration for a short period (56 to 80 days) following the grazing season and can be marketed with just as much finish as similar steers retained for another year and marketed from grass. Two-year-old cattle finished in this manner were slightly lighter (approximately 50 pounds) in weight, and possessed a smoother and more desirable appearance than the steers carried for another year and marketed from grass as three-year-old grass-fat steers.

TABLE 4—Summary of Tables 1, 2, and 3

	Lot I	Lot II	Lot III
Ave. no. of days	220	707	1005
Total no. of calves	46	22	16
Ave. initial cost	\$ 48.80	\$ 46.37	\$ 49.40
Ave. initial wt.	456	479	476
Ave. final wt. (home)	929	1351	1395
Ave. gain	472	872	919
Ave. daily gain	2.15	1.23	.91
Ave. market wt.	907	1290	1347
Ave. shrink	22	61	48
Ave. hot carcass wt.	558	783	† 796
Ave. dress % (hot and home)	60.06	57.95	† 57.31
Ave. cost of feed (including pasture)	\$ 63.87	\$ 94.00	\$ 95.39
Ave. cost per 100 lbs. gain	13.52	10.77	10.38
Ave. total cost	112.67	140.09	144.79
Ave. net sale value	118.51	151.16	143.04
Ave. profit or loss	+5.84	+10.07	-1.75
Ave. return value of calf	54.64	56.44	47.65

†For only one group.

The results also emphasize the fact that a short grain feeding period for two-year-old steers is less expensive than the practice of wintering and grazing these cattle for another season. The total cost of feed (pasture included) was actually \$1.39 less and the net return per steer \$8.12 greater for the calves marketed as two-year-old steers than for those marketed as three-year-old steers.

The calves used in this experiment returned more net profit to the producer than either to the feeder or to the West Virginia Agricultural Experiment Station. During the duration of this experiment, under West Virginia conditions, cows and calves could have been maintained at an average annual cost of approximately \$35.00. These calves were bought at an average price approaching \$50.00, which represents a good profit to the producer. Heifer calves can readily be sold as feeders and for baby-beef production they are almost as valuable as steer calves.

In summing up the results of this experiment it would seem that there is a place in West Virginia for the production of more good beef calves. Adjoining states offer a good market for our surplus feeder calves and it is not as speculative a phase of beef production as the finishing of heavy steers. In developing a cow herd for the production of such calves care should be taken that all animals of breeding age are kept free from such diseases as infectious abortion and tuberculosis.

CONCLUSIONS

Calves fed and marketed as baby beeves proved to have a greater potential value than calves fed and marketed either as two-year-old or three-year-old steers.

Calves fed and marketed as two-year-old steers had a greater potential value than calves fed and marketed as three-year-old steers.

Grass alone will not produce sufficient finish on two-year-old steers for slaughter.

A full grain ration in drylot for a short period (56 to 80 days) will produce enough finish to make two-year-old grass steers desirable for slaughter and actually more desirable for the market than three-year-old grass-fat steers.

A short grain feeding period for two-year-old steers is less expensive and produces a more valuable slaughter animal than carrying them another year and marketing them as grass-fat three-year-old steers.

These trials indicate that West Virginia should produce more good beef calves and market them at a relatively young age.

Good beef calves produced in West Virginia should be marketed as feeder calves or finished and marketed for slaughter at a young age.

